

THE RESOURCES AGENCY OF CALIFORNIA  
DEPARTMENT OF FISH AND GAME  
MARINE RESOURCES OPERATIONS

REPORT FOR THE MONTH OF JUNE 1968

Phil M. Roedel left July 1 on a 2 month assignment in South Korea. Mr. Roedel has been selected to serve as a Consultant to the Korean Government in planning a program in population dynamics. He will advise the government in establishing an effective program for investigating and exploiting Korea's marine resources and in establishing management procedures for implementing the program.

A total of 27,000 anchovies were tagged during the month, 12,500 off Morro Bay and 14,500 in San Francisco Bay. This brings the total tagged since 1966 to 321,000.

Squid catches continued high in Monterey Bay; 2,000 tons were landed.

Three more vessels from the southern California wetfish fleet were sold bringing to five the number sold in the last 2 months. The fleet is now down to about 30 active vessels.

The new Simrad Sonar was installed on the ALASKA and initial scanning indicates the equipment has great promise for our future sea surveys.

Twenty-three English sole tags were recovered. Most showed little movement but three released off San Francisco last February were recovered by Eureka trawlers.

Shrimp Area A was closed June 17. Total reported landings are 1,531,805 pounds, slightly above the 1.5 million pound quota. Based on the results of a survey by nine commercial vessels with five MRO biologists aboard. The Commission reopened the season effective July 3, until an additional quota of 500,000 pounds is taken.

The annual sea otter census was conducted on June 11. Of the 576 counted, 107 were south of Point Piedras Blancas.

The SCOFIELD caught 6 albacore during an 8-day exploratory cruise which extended to 200 miles off southern California.

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## SECOND FAO TECHNICAL CONFERENCE ON FISHERIES RESEARCH CRAFT

The Second FAO Technical Conference on Fisheries Research Craft was held at Pacific Science Center, Seattle, Washington from 19 May through 24 May 1968.

Approximately 250 delegates from over 20 countries attended this Conference, and 42 papers were submitted in advance, published in one volume and distributed to delegates on registration. There were many more papers presented during the sessions--all will be published at a later date and mailed to the registrants. Because there were so many papers presented and in order to keep the Conference on schedule, the papers were not presented orally. A rapporteur was appointed for each of the seven technical sessions. The rapporteur presented an oral summary of the papers and acted as chairman during his session. Delegates read the papers the night before (those for discussion the next day) and raised questions from the floor.

The Conference Chairman was Mr. George C. Nickum and the Conference Secretary was Jan-Olof Traung. Mr. Nickum did an excellent job of keeping the Conference running smoothly and on schedule. Later in the week as more and more delegates were ready to talk the speakers were limited to 3 minutes.

The paper on our new vessel came up for discussion Monday at the first technical session, with most delegates just arriving and as such did not get much discussion at first. Later as the Conference got rolling more freely several references to the vessel were made and discussed. In contrast to papers presented, our vessel was considered in the class of smaller vessels. Nearly all papers presented on fisheries vessels were on stern trawlers and of 3,000 to 4,000 tons.

Mr. Lawrence R. Glostén, Naval Architect was rapporteur for the first session. He summarized the several papers and discussed at length the importance the Naval Architect should play in the very early stages of research vessel planning. The Conference was attended by a large number of Naval Architects from all over the world. Attending the Conference also were many Port Captains or Operation Supervisors, such as from Japan, United Kingdom, U.S. Fish and Wildlife, State Universities and Oceanographic Institutions.

Most of my off-session time was spent in the company of Operation Representatives exchanging experiences and discussing problems common to the operation of research vessels.

Jonathan Leiby, Naval Architect with Woods Hole Oceanographic Institution, presented a paper on U.S. Shipping Regulations and its effect on the research community. This paper is to be included in the final publication to be distributed soon.

The Thursday session adjourned at 1300. This gave those of us who were interested, an opportunity to visit several research vessels especially made available for inspection. These included the MILLER FREEMAN, JOHN N. COBB (USFWL), the DAVISON AND SURVEYOR (U.S. Coast and Geodetic Survey) and the Canadian R/V G. B. REED. All were docked on Lake Union at the Coast and Geodetic Survey dock, a short distance from the hotel where most delegates stayed. I took advantage of my early arrival and fair weather and visited the vessels Sunday afternoon and Thursday.

Charter and use of commercial fishing vessels for research work was discussed

at length. D. L. Alverson, BCF, clearly pointed out the impracticability of chartering commercial boats by States and Federal Agencies of the U.S. due mainly to the legal and political restriction in selecting best available equipment and qualified fishermen, in order to give the experiment at least half a chance of success.

The entertainment consisted of "no-host" cocktail and dinner affair Monday night and two short cocktail parties Tuesday and Wednesday sponsored by Society of Naval Architects, local fishing industry and Marine Construction and Design Co. These gatherings offered an excellent opportunity to meet with many local people that have contributed towards the planning and design of our new vessel. Many will be contacted again throughout the construction.

I was very much impressed by the way the Conference was conducted, the quality of the papers, the caliber of delegates from so many distant countries and the delegates participation in discussions both formal and informal.--  
Paul Petrich.

## 1. BOTTOMFISH

### A. Fishery

Flatfish: Fishing success by trawlers was somewhat reduced compared to recent months. Moderate concentrations of fish were located in all but the southern areas. In northern California, processing plants operated at capacity and imposed limits to control landing volume. All flatfish species were abundant, but Dover sole dominated the catches. Central California fishermen landed moderate catches of English sole and also intermittent Dover and petrale catches. Morro Bay and Santa Barbara landings were very light and some boats have stopped trawling to prepare for the albacore season.

Roundfish: All California ports had light landings of rockfish with most incidentally caught sablefish being utilized as animal food.

### B. Research

Flatfish: Twenty-three tagged English sole were returned during June. While most tag recoveries showed little movement; three fish which were released in February of this year off of San Francisco were captured by Eureka trawlers.

Distribution of new logbooks to trawler captains is nearly complete. Reactions to the new logs are mixed, but the additional information will make effort studies much more accurate.

Special studies on Dover sole age and growth were continued.

Market sampling was accomplished at all trawl ports from Santa Barbara and Crescent City, and May logbook and ticket data for all trawl landings were processed.

Roundfish: No research was conducted as the position is vacant.

The bottomfish project's rockfish, lingcod and sablefish catch and life history data are behind schedule, particularly in the Monterey area because of vacant position.

## 2. SHELLFISH

### A. Fishery

Abalone: Fishing effort remains light in the Morro Bay region as several boats have shifted operations to Santa Barbara. A combination of heavy exploitation of the Pt. Estero-Cambria abalone beds plus spotty weather apparently effected the movement to Santa Barbara. Only one to three boats, daily, were noted in the Pt. Estero to Cambria area and catches averaged about 3 dozen daily.

The best landing reported came from San Miguel Island where two fishermen (one boat) took 65 dozen red abalone in two days.

A Morro Bay diver incurred a severe case of the "bends" while fishing

abalone at Gull Rock, Santa Cruz Island.

Crab: The San Francisco crab season ended June 30th. Landings for the area are expected to be about 1,010,000 pounds.

Crab fishing in northern California was almost non-existent. Total of landings for the season stands at 11.8 million pounds and probably will not change by the legal closing date.

Shrimp: Area A shrimp season closed Monday, June 17. Total reported landings are 1,531,805 pounds -- 31 thousand pounds over the 1.5 million pound quota. The Area A shrimp quota was filled in less than 7 weeks. Catch-per-hour rates were the highest ever recorded on this bed. Weekly averages ranged as high as 2,500 pounds per hour and the season's average should fall between 1,100 and 1,200 pounds per hour.

Area B-2 (Bodega Bay) landings total 20,890 pounds but there have been no landings reported since June 17. Catches have been below commercial quantities and it appears that the fishermen may be through for the season in this area. Fishing has taken place off Pt. Reyes in 40 to 50 fathoms of water.

No effort has been reported in Areas B-1 (Ft. Bragg) and C (Morro Bay) so far this season.

Oysters and Clams: Eureka Oyster Farms received a shipment of seed from Dabob Bay, Washington. The seed was inspected for pests by MRO personnel at Eureka. The shipment was equivalent to 250 standard cases. No pests were found.

Johnson Oyster Company at Drakes Estero received a shipment of seed equivalent to 375 standard cases from Dabob Bay, Washington, also. Inspection of the seed by MRO personnel revealed no pests.

Oyster production has slackened due to lack of demand during the summer.

#### B. Research

Abalone: Survey dives in the Pt. Estero region disclosed an abundance of 7-inch red abalone ("sport legals") but "commercial legals" (7 3/4 inches) were relatively scarce. In one trial, project divers (2) recovered 6 "commercial legals" during a 20 minute dive.

Sub-adult and adult red abalone are now exhibiting good seasonal growth.

Nine concrete slabs, 16 inches square by 1 inch thick, placed to determine the value of artificial abalone habitat, have been attracting flat abalone, *H. walallensis*, quite frequently; but thus far no red abalone have been noted.

A continuous recording Ryan thermograph was placed at our Pt. Estero study site.

Crab: The post season survey conducted on the NAUTILUS was completed June 3, a total of 55 stations were sampled with commercial type traps. Catch per trap was 0.7, 1.4, and 4.1, legals, sub-legals and females, respectively. These were less than last year's post season catch and

the outlook for next season is not bright due to the limited distribution of sub-legal males.

Most of the month was devoted to assisting on a clam survey of Tomales Bay and a shrimp survey in northern California.

Market sampling came to a halt as the crab fishery came to a standstill. Our two trawl stations in south Humboldt Bay produced several hundred first and second instar market crabs of the 1968 year class. The catches are being sorted and counted by Eureka Senior High School research observers.

Shrimp: Five MRO biologists and nine commercial shrimp trawlers participated in a survey of the Area A shrimp population following the close of the shrimp season. Our standard research cruise techniques were followed and the data has been analyzed. Enough shrimp remain to provide adequate spawning in the fall and allow further harvest. A new quota of 2.0 million pounds has been recommended to the Commission. This would allow an additional harvest of approximately 0.5 million pounds.

Length and weight of shrimp from the Area B-2 fishery were determined individually by sex.

Oysters and Clams: Clam diggers were interviewed and surveys of the clam resource were conducted at Clam Bar in Tomales Bay during June. Clams were also measured from the diggers' catches. Siphon holes were counted from randomly selected plots during the survey portion. Clams were also dug to determine size, weight, meat weight and age.

### 3. SHELLFISH AND BOTTOMFISH DATA ANALYSIS PROJECT (M68D)

#### Information Storage and Retrieval System: Data Bank

The master tape containing the shrimp research cruise data was updated after a correction was made to the system by Control Data Corporation. The crab market and sea sample data have been established in INFOL except for one year's data. The "box sampling" data have been keypunched and are being established in an INFOL system before running a report showing season and depth distribution of the flatfish. The Fort Bragg catch and effort from 1964 through 1966 has been established and interrogation showing catch by depth for each month was run. Cruise 68-N-3 crab is being established.

Several programs were run using the data of the recent shrimp investigation cruise 68-C-1. The Humboldt Bay trawl data containing information on base crab resource is being keypunched.

#### Operations Research

Length weight curves for the spot prawn, *Pandalus platyceros*, were computed for several time periods. Age composition of the Dover sole landings in Eureka were computed for Gary Smith. The results of our recent post card survey of the crab fishermen are being keypunched prior to analysis. The length frequencies of shrimp for each month in 1965 and 1966 are being computed from the research cruise data for Dan Gotshall. A computer program is being written to summarize the

crab information from research cruises. The petrale sole tag returns from the Fort Bragg area tagging in 1964 are being keypunched.

4. PESTICIDE MONITORING (B.C.F. Contract)

Chemists in charge of the Bureau of Commercial Fisheries Laboratory in Gulf Breeze, Florida feel that duplicate analysis of all monitoring samples is no longer necessary. Beginning in June 1968 only four samples are to be submitted to Gulf Breeze for confirmation.

Installation of a second detector system during June will permit confirmation of pesticides difficult to identify.

A manuscript summarizing the accumulation of chlorinated hydrocarbons in California bays and estuaries in 1966 and 1967 is being prepared.

Project is on schedule.

5. SHELLFISH LABORATORY OPERATIONS (Bartlett Project M64R3)

Research: Gaper clams and Washington clams from Drakes Bay were examined for maturity and spawning condition. Collections will be made routinely throughout the year for this study.

A survey of the ocean area from Hovden Cannery to the cannery fish hopper was made to determine the feasibility of laying an ocean intake in deep water. This would eliminate troubles from storms, surges, fouling and kelp that are anticipated in a shallow water intake. Water would also be a more constant temperature. Hopkins Marine Station was very interested in the idea and plans for a joint intake were discussed.

6. OYSTER DISEASE AND MORTALITY STUDY (B.C.F. Contract)

Routine sampling was carried out in Drakes Estero, Tomales Bay and Humboldt Bay during June. In addition numerous gapers (dead oysters with soft parts intact) were collected from the experimental station, and from the commercial operations in the area. Mortalities of Pacific oysters remains negligible at Drakes Estero and quite low at Tomales Bay. Preliminary estimates at Humboldt Bay indicate that the commercial populations have suffered approximately 15 percent losses so far this season.

The processing of all tissue and plankton samples continues.

The program is on schedule.

7. PORT SAMPLING (Bartlett Project 66-D)

Shrimp fishing at Crescent City was excellent during the month. The Area A quota was filled and the season closed June 17. The grade of shrimp landed was very good with an average count per pound of 102 for 25 samples.



All of the 13 boats were on market limits of from 5,000 to 12,000 pounds daily.

The one boat delivering to Brookings has fished the same area as the Crescent City boats.

One vessel fishing shrimp at Port Orford all month has very good fishing with catches up to 6,000 pounds per hour when the shrimp are located.

Hake stomach sampling continued with 37 stomachs examined at Crescent City and 22 at Port Orford. The 37 stomachs contained an average of 3.6 shrimp per stomach.

Two days were spent aboard shrimp trawlers for a survey of the shrimp bed.

#### 8. SAN FRANCISCO - DRAINAGE OCEANOGRAPHY (S.W.Q.C.B. Contract)

The entire month has been spent in preparing the final report for the S.F. Bay-Delta Water Quality Control Program. The final report should be ready for duplication by July 8, 1968.

#### 9. PELAGIC FISH

##### A. Fishery

Landings in tons	June		January 1 - June 30		10 yr. mean 1957-1966
	1968*	1967	1968*	1967	
Species					
Anchovy	5	134	1,939	27,868	4,450
Mackerel, jack	3,400	4,067	12,347	13,432	15,264
Mackerel, Pacific	7	30	355	154	5,275
Sardines	3	6	41	61	1,448
Squid	2,000	2,768	9,158	7,119	3,788
Total	5,415	7,005	23,840	48,634	30,225

\*Estimated. Accumulated landings are revised monthly.

##### B. Anchovy

##### Fishery

Commercial: Reduction season closed. Regulations for a 1968-69 season will be considered at the July 26 Fish and Game Commission Meeting in San Diego.

Small deliveries were made for pet food and dead bait.

Live Bait: A new sampling program that is expected to yield good estimates of species composition of the catch in terms of pounds and numbers was initiated. Data on sex, maturity, age, and length are obtained from anchovies and sardines. Anyone wishing samples and catch data for queenfish, white croaker, pompano, or smelt which appear in the catch should contact the anchovy project.

## Research

During June, 27,000 anchovies were tagged and released; 14,500 on June 5-6 in San Francisco Bay and 12,500 on June 21-24 off Morro Bay. Approximately 206,000 tagged anchovies were released during the past fiscal year in areas from San Diego to San Francisco Bay. Of the 321,000 released to date 608 tags have been recovered.

Recoveries during the 1967-68 fiscal year which demonstrate gross movement:

### Southern Movement

San Francisco to Monterey	14
San Pedro-Port Hueneme to Ensenada, Baja California, Mexico	12
San Diego to Ensenada, B.C., Mex.	65
	<u>91</u>

### Northern Movement

San Diego to Port Hueneme	3
San Diego to Monterey	12
Santa Catalina and San Clemente Islands to Monterey	9
San Pedro-Port Hueneme to Monterey	8
	<u>32</u>

The relative magnitude of these recoveries may be misleading indications of movement since the fishery in each of the recovery areas has been discontinuous and in some cases, notably southern California, practically non-existent.

Parrish spent considerable time writing a report on "Factors Inhibiting the Monterey Bay Anchovy Reduction Fishery". In a nutshell, plant capacity remains low, because of the poor market for fish meal and oil, thus limiting the daily catch of the fleet and preventing the purse seiners and relatively inefficient lamparas from filling quotas when fish are available. In addition the season is open for only about 3 of the 5-6 months when anchovies are most available and desirable from the standpoint of oil yield.

## C. Mackerel-Sardine

Jack Mackerel landings rose this month to 3,400 tons, but total catch still remains behind last year's. Most of the jack mackerel were taken at Cortes Bank, with small catches also occurring in the waters off La Jolla, San Pedro and Anacapa Island. Two Terminal Island canneries operated on a very limited basis; however, mackerel was in good demand at the other canneries so that the catch was not held down to any extent for the month.

Except for a few fish taken incidentally with squid catches, no jack mackerel landings were reported in the Monterey area.

Pacific Mackerel landings dropped to only 7 tons, the majority of which were taken near La Jolla and San Pedro, while trace amounts were taken at Cortes Bank. All the catches were mixed in with jack mackerel.

Sardine landings continued low with only 3 tons landed. The San Diego-La Jolla area produced most of the catch. Sardines continue to be in great demand both for live and frozen bait.

Squid landings continue to be high with 2,000 tons landed at Monterey.

Fleet: The southern California mackerel-sardine purse seine fleet continues to decrease in size. Three more boats were sold this month and moved to other fishing areas. This brings the total number of boats to five which have left in the past two months. The southern California purse seine fleet is now down to approximately 30 seiners who actively seek mackerel and other fish.

Research: Twenty-two jack mackerel, 5 Pacific mackerel and 3 sardine samples were taken this month.

Work continued on an analysis of the jack mackerel fishery covering the period 1947-1968. In addition, Parrish spent considerable time reviewing hundreds of Pacific mackerel otolith age assignments made during the period 1956-1964.

#### D. Fisheries Resources Sea Survey (M63R)

The R/V ALASKA completed a cruise of the waters off central California, between Monterey Bay and Point Conception. Population densities of northern anchovy were extremely low over the entire survey area and no localized concentrations of fish were detected. A total of 31,353 schools of northern anchovy was estimated from echo sounding. These and data from previous cruises indicate a period of low abundance for northern anchovy in central California during late winter and early spring months.

Water temperatures and heavier-than-normal plankton concentrations manifested an "upwelling period" in nearshore waters over much of the region surveyed.

The ALASKA sailed June 16 on a 15 day cruise in southern California waters. Part of their time will be devoted to a broad reconnaissance survey of investigating seasonal distribution and migration patterns of the northern anchovy. Part of the cruise will be devoted to observation and development of nets and gear. Divers will observe the mid-water trawl under tow to check general net configuration and fishing attitude as well as fish behavior in relation to the trawl.

Installation of a Simrad Sonar was completed and initial scanning with this apparatus indicates great promise in fish detection for future survey work. A net-reel arrived from Seattle and will be installed during July.

## 10. TUNA

### A. Albacore

#### Research

Life History: Age and growth--Computer program AGECOM was used to

process the age composition data for July, 1965 and for the entire 1966 and 1967 albacore seasons.

Migration--The leaders of the 1968 albacore migration were located as close to shore as 8 miles southwest of Cortez Bank, and as far seaward as 28 to 78 miles southward from San Juan Seamount. The albacore were caught by personnel aboard the research vessels D.S. JORDAN and N.B. SCOFIELD (68-S-1) during June 12-23--the fish were 12 to 16 pounders.

Food habits--Stomach contents of six albacore caught during cruise 68-S-1 were preserved frozen and brought back to the laboratory, for identification.

Predation and competition--Numbers of large jack mackerel usually are found during preseason albacore surveys. This year cruise 68-S-1 found them while operating a night light station on June 24 (time 2100-2400). The mackerel ranged in size from 12 to 24 inches; 90% of those caught were more than 18 inches. An estimated 2-3 tons appeared around the boat.

Population Dynamics: Albacore logs that were rejected by computer program EDIT have been corrected and added to the tape. Only 232 logs were obtained during 1967 because of a lack of personnel--this is about 30 percent of what we usually gather.

Exploratory Fishing: The N.B. SCOFIELD (68-S-1) returned to port on June 26, after an 8-day exploratory fishing and oceanographic cruise. The trip originally was scheduled to begin May 25, but the old N.B. SCOFIELD broke. Six albacore and 10 jack mackerel were caught during the cruise which extended about 200 miles offshore from southern California.

Ecology and Oceanography: SCOFIELD cruise 68-S-1 provided considerable biological, oceanographic, and meteorological data that may be related to albacore occurrence. These are now being processed. The leaders of this year's albacore migration were discovered traveling through the cooler part of their preferred temperature regime; they were in water of 60-63°F. Surface salinity details are not available as yet.

Education and Public Relations: Newsletter--Over 600 albacore newsletters were prepared and distributed to sport and commercial fishermen and to the public. A considerable amount of time was spent answering questions about this season's albacore migration.

#### Fishery

No action, although rumors were flying.

### B. Bluefin Tuna

#### Research

Life History: Migration--A paper concerning the transpacific migration of bluefin tuna was completed and edited. It will be submitted for publication shortly.

The annual bluefin migration was late this year. This will be the first year since 1951 during which no bluefin were landed in June. Consequently,

our contract, with the Fishermen's Coop., to tag bluefin at the end of the fiscal year (the beginning of bluefin season) has terminated without good results. However, a new contract is being prepared.

Physiology--A study of the bluefin tuna pineal apparatus was launched during mid-month. Using electron microscopy, we plan to identify the cells comprising the pineal and to determine their function.

Education and Public relations: A considerable amount of time was spent answering questions about the results of the N.B. SCOFIELD oceanographic and exploratory fishing cruise.

#### Fishery

Sport: Early in June, passengers aboard San Diego-based partyboats landed over 100 bluefin tuna while fishing near Guadalupe Island. These were the first bluefin of the 1968 season, and they ranged from 15 to 25 pounds--40-60 pounders were reported but not caught.

Commercial: No fish were caught until the last week in June, when small schools (ranging to 15 tons) were netted in the Cape San Lazaro area off Baja California. No price has been set, although nearly 400 tons were reported aboard vessels now at sea.

### C. Pacific Bonito

#### Research

Life History: Migration--Sixty bonito were tagged and released early this month, bringing the season's total to over 700. Most of the 47 tagged fish recovered were caught near the release location. One tagged in King Harbor was caught near San Onofre--it had traveled about 65 miles in 19 days.

#### Fishery

Sport: Most bonito caught aboard partyboats were small--about 3-pounders. Fishing was rated as good.

Commercial: Seiners landed about 8.5 tons this month. Most were netted near Santa Catalina Island and off La Jolla.

### D. Miscellaneous

#### Resources of Tunas and Related Species

On June 18, the yellowfin tuna season was closed. At that time the season limit of 106,000 tons was reached.

Fishermen aboard Japanese longliners off Mexico reported that purse seiners of other countries are destroying their gear.

The Tuna Club plans to anchor a raft on the 209 Spot (SE of Santa Catalina Island). The objective is to see if it will attract game fish such as tuna, marlin, yellowtail, and bonito. The project has been cleared by the Coast Guard and the Club has asked our assistance.

PACECO engineers at 2350 Blanding St., Alameda are now in the purse seine building business--"combination" seiners-commercial vessels that

can be converted to fish for many species with various types of gear. They are constructing 5 vessels that are 151' long and 500 tons capacity. The vessels also have bow thrusters, twin screws, a bubble bow, and 16 wells for holding fish. Mr. Donald Oberg further reports that a new container system, one that his company is noted for, will be introduced in the vessel design. The fish holding well thus will be removeable containers which can be lifted from the boat, set on the dock, plugged into refrigeration again, and held until ready for sale. Meanwhile new containers (wells) can be put in the vessel and it can sail for the fishing grounds.

#### Administration

Personnel: Richard Murphy was appointed Seasonal Aid.

Conferences--Three days were spent preparing for and attending a conference on salaries for marine trades. All of our recommendations were agreed to by the Personnel Board.

Budget--Considerable time was spent in preparing the 1969-1970 budget. Two new projects were submitted for funding.

### 11. SPORTFISH

#### A. Partyboat

Research: Approximately 250 sand bass were tagged during June and 19 tagged bass were recovered. Liberty periods ranged from 4 to 439 days. A number of hake and Pacific ocean perch otoliths were wafered for the Bureau of Commercial Fisheries, Seattle.

Fishery: More than 2,500 salmon were taken on partyboats during April and May in the Santa Barbara-Port Hueneme area. Almost all ports south of this area reported one or more salmon in May.

The 1968 partyboat catch of key species, accumulated through May, compares with 1967 as follows: (nearest 100)

<u>Through May</u>	<u>1968</u>	<u>1967</u>
Rockfish	828,600	681,600
Bonito	236,500	36,200
Kelp, sand bass	211,400	113,900
Barracuda	138,400	103,700
Salmon	27,400	34,700
Calif. halibut	23,600	24,700
Yellowtail	4,700	6,600
Striped bass	1,200	1,200

#### B. Environmental and Behavioral Studies of Coastal Sport Fishes (DJ F22R)

During June this project's activities were again varied. Project personnel: made visual observations of shark behavior, at San Clemente Island in cooperation with members of the U.S. Navy Underwater Warfare Center; with the assistance of Marine Patrol, collected and shipped four dozen pink, and green abalone to the Hawaii Division of Fish and Game; made underwater observations of experimental shrimp trawls being

fished; re-established the 5m markers along our CONES transect, Palos Verdes Point; with Marine Patrol, observed the de-watering of one intake tunnel at San Diego Gas and Electric Encina power plant; and ascertained the condition of the N.B. SCOFIELD's hull, rudder, zincs and propeller.

#### Upper Newport Bay-Sunset Bay Contract Studies

Charles Haugen was appointed June 17, 1968, to undertake this contract work.

June's work load consisted of orientation and review of the Upper Newport Bay development plans and a literature search for pertinent studies previously conducted in similar estuarine environments.

#### Redondo Harbor Biological Monitoring (Southern California Edison Company Contract)

Most of the month was spent on the creel census, and on identification of material taken in the March benthic index survey.

Creel census data shows that the fishing pressure remains high, with anglers spending more than 30,000 and 28,000 angler hours in May and June respectively. Pacific bonito catches also remain high with 12,749 and 15,735 fish being taken in these months.

In response to a call from Port Royal Marina, in the harbor, project personnel observed 3 striped bass (*Morone saxatilis*) swimming in the harbor on June 27. These were similar in size to the 12 observed on May 18, in this same area.

#### C. Central California Marine Sportfish Survey (DJ F25R1)

Skiffs and partyboats were sampled at Monterey for species composition and size of fish caught.

One week was spent on the kelp ecology study.

Fish were tagged at three reefs off Monterey and Pacific Grove. Four tag returns were recorded, 2 blue rockfish, 1 copper rockfish, and 1 lingcod. None of the tagged fish showed movement.

Special reports and information were submitted to Marine Resources Branch, Sacramento office, concerning the gill net, longline, and trawl fisheries of Monterey.

The 1966 census study was submitted for typing as a MRO Reference Series Report. Two days were spent at Terminal Island for final editing and corrections.

#### 12. FOOD HABITS STUDY (Bartlett M67R)

Stomachs from 84 fish were collected during the month from commercial, sport, and Departmental fishing activities. Included in these samples were key project species; kelp bass, sand bass, barracuda, yellowtail, and California halibut. Additional specimens included two jack mackerel samples, a Monterey Spanish mackerel, and a mola.

Four species of common myctophids (several samples) were processed for our otolith-length/fish-length reference curves and our otolith reference collections.

Approximately 125 stomachs were examined; contents identified and recorded for later tabulation and analysis.

Project Plans, Specifications and Estimates for fiscal 1968-69 were rewritten to reflect the projects change in emphasis to key sport species and the role of the anchovy in their diets.

Eight to ten days were devoted to in-service training of two seasonal aids, Dan B. Odenweller and Stuart Davis, assigned to the project at mid-month.

Project is still behind original schedule. Production should pick up as the seasonal aids begin to contribute towards project goals and objectives.

### 13. SPECIAL PROJECTS

#### A. Southern California

The annual sea otter census was flown on June 11 in clear weather, 576 otters were counted. One hundred and seven of the otters were in the controversial area south of Point Piedras Blancas.

Some time was spent on Bay and Estuary Planning.

A paper, written for submission to The Veliger, on the invertebrates taken during the Santa Monica Bay Trawl Study was completed and reviewed by Fish and Game editors.

#### B. Northern California

Arrangements for experimental work with pesticides were made with Marine World of Redwood City. They will supply building space and a sea water supply with our laboratory staff setting up aquaria. One day was spent aboard the tug "Alex B." observing kelp harvesting off Big Sur Point. Breakdown of the engine caused the return to Monterey to be delayed two days with the vessel anchored in Carmel Cove.

Preliminary plans were made for beginning the series oceanographic cruises of the NAUTILUS in the Gulf of the Farallones.

### 14. BIOSTATISTICS

#### A. Data Processing

Regular Reports: The May 1968 cannery and processors reports were completed, and the monthly letter summarizing the tuna case pack was mailed.

The April 1968 landing and shipment reports were tabulated, decoded, and distributed to the field offices.



The fourteenth period 1967, landing and shipment reports were tabulated, decoded, and distributed to the field offices.

The May 1968 partyboat catch reports were tabulated, and letter summarizing the catch were mailed.

Changes in the Dealer Master List were made and the list forwarded to Sacramento.

Annual Reports: The 1967 Circular #42, Statistical report of fresh, canned, cured and manufactured fishery products for 1967, was distributed.

The 1967 Oyster reports were tabulated, decoded, and sent to the Shellfish Investigation.

The 1967 reports of Incidental Fish Catch by Shrimp Trawlers was tabulated for the Shellfish Investigation.

The 1967 Live Bait reports were tabulated.

The I-B and I-A checking reports for the 1967 Bulletin were tabulated.

Final Inshore Bait Landing reports were tabulated for the 1967 Bulletin.

Two shrimp supplements were mailed to appropriate offices.

Special Reports: The following IBM card decks were prepared for the Shellfish & Bottomfish Data Project: Box sampling 2001-2049; 2050-2099; 2100-2149; 2150-2199; 2250-2299; 2300-2358.

The Humboldt Bay trawl record was tabulated for Shellfish & Bottomfish Data Project.

The 1967 Sturgeon reports were tabulated and decoded for the Inland Fisheries Branch and mailed to the Striped Bass & Sturgeon Investigation, Sacramento.

A table detailing the commercial and partyboat landings in Orange County, 1966 and 1967, was compiled for Eleanor Young, Orange County Planning Department.

Tables for the 1967 California Abstract were compiled and mailed to the Finance Department, Sacramento.

A table showing the poundage of fish received by Calo Pet Food Company in 1967 was compiled for Tom Jow, Trawl Investigation.

Tables showing area 5 trawl landings for ten years and the landings from area 5 origin blocks for 1967 were compiled for Doyle Gates, Marine Resources Branch.

Species inventory tables were updated; boat length and age information was compiled for use in the Marine Resources Plan.

A card deck detailing information about the crab fleet from 1967-68 boat registrations was prepared for Dave Mackett, Shellfish & Bottomfish Data Project.

The special shrimp cruise data card deck was prepared for Dan Gotshall, Shellfish Investigation.

A table detailing the sport and commercial catch in California was compiled at the request of the Deputy Director for John Peterson, Washington Fish and Oyster Company of California, San Francisco.

Work in Progress: Boat registrations and commercial fishing licenses continue to come in.

Wholesale dealer licensing is underway and to date 127 applications have been received.

The editing of the May fish receipts is almost completed, and editing has started on the June cannery and market receipts, and the June sport catch logs.

#### B. Technical Assistance and Mathematical Analysis

Statistical and Mathematical Analysis: An analysis of historical ocean shrimp data using the logistic model and Murphy's method was discussed at a meeting with shellfish personnel. The 1968 fishery and possible quota adjustments based on the post-season survey were considered.

Consultation and assistance were provided to Region V and D.J. Inland Fisheries personnel as well as to MRO staff members.

Computers: Two programs to fit unimodal and bimodal spawner recruit curves were completed.

Two new von Bertalanffy growth curve programs were written. One fits the curve to lengths and growth increments over time intervals such as would be obtained from tagging studies. Ages are not required. The second program utilizes an improved method of fitting the curve to length at age data when the time intervals between age groups are unequal.

The revised card-to-tape program and its associated tape checking program are still in the de-bug stage.

The sablefish boat catch analysis program is being revised to operate directly from the commercial catch record tape. This will allow the reports to be produced about two months earlier than under our present system.

Catherine Berude attended a class entitled "360 Operating System Facilities" at the IBM Educational Center. The course covered the rather complex IBM job control language.

#### 15. VESSELS

##### N. B. SCOFIELD

Vessel completed major engine repairs on the 11th, then conducted several days of dock and sea trials.

On the 19th the N. B. SCOFIELD sailed from San Pedro to conduct seven days Albacore Study in the vicinity of San Juan Seamount.

Balance of the month crew on vacation.

Days scheduled 7; days operated 7.

#### ALASKA

The ALASKA was at sea off central California conducting Pelagic Fish Studies from the 1st through the 7th, and off southern California from June 16 through the end.

Days scheduled 22; days operated 22.

#### NAUTILUS

From the 1st through the 3rd the vessel was engaged in Crab Studies off San Francisco.

Balance of the month crew on vacation and performing maintenance.

Days scheduled 0; days operated 3.

#### MOLLUSK

Vessel engaged in Abalone work off Morro Bay.

Days scheduled 5; days operated 6.

### 16. BIOLOGICAL NOTES

A *Scomberomerus sierra* was caught off the Balboa Pavilion in Newport Bay. It was brought to the laboratory on June 14 for identification.

### 17. MISCELLANEOUS

#### A. Meetings, Talks and Visitors

- |          |  |
|----------|--|
| June 1   | - Meeting with members of the Redondo Beach Harbor Patrol to observe, evaluate and comment upon a fish kill in Redondo King Harbor: Turner; Redondo Beach. |
| June 3   | - Roedel, Baxter, Messersmith and Richardson participated in MRC Meeting in San Pedro.   |
| June 3-7 | - Blunt had numerous and lengthy discussions with Mr. Mario Carreño of Chile on sampling methods.  |
| June 5   | - Roedel & Baxter attended a meeting with the Commercial Fishing Industry in San Francisco.  |
| June 5   | - Meeting with Robert Lewis, Bay-Delta project, to discuss ocean and bay water quality criteria: Turner; Los Angeles and Terminal Island.                  |

- June 10 - Carlisle showed John Prescott of Marineland aerial photos taken during sea lion censuses; Terminal Island.
- June 10-11 - Roedel, Baxter, Frey, and Jow attended meetings on MRO-MRB programs in Sacramento.
- June 11 - Blunt was interviewed briefly on grunion as part of Tempo TV program.
- June 11 - Meeting with San Diego Gas and Electric Encina power plant personnel to observe, evaluate and comment upon de-watering of one intake tunnel: Turner and Warden Bryarly; Encinas.
- June 11 - Aplin & Dahlstrom attended a bay & estuary planning meeting at Region 3 offices.
- June 13 - At Morro Bay Aplin discussed the use of an oyster bed as a demonstration area with Ralph Johnson who produces oysters on a shellfish allotment in the bay.
- June 13 - Dick Heimann met with Mr. Glisch of the State Franchise Tax Board.
- June 13-14 - Blunt and O'Brien attended a scale reading session held at the Fishery-Oceanography Center at La Jolla.
- June 14 - Meeting with R. S. Hickman, Bechtel Corporation, to discuss ecological studies: Turner; T.I.
- June 18 - Southern California Bay and Estuaries Meeting: Roedel, Baxter, Carlisle, Haugen, Bissell, McCormick and Region 5 personnel; Terminal Island.
- June 19 - Orange County Sanitation Districts' meeting to discuss the desirability of environmental surveys prior, during and subsequent to ocean outfall construction: McPeak and Haugen; Fountain Valley.
- June 19-20 - Baxter attended Regional Manager-Branch Chief Meetings at Headquarters in Sacramento.
- June 20 - Clemens addressed 100 members of the Tuna Club at a luncheon meeting. Albacore and bluefin tuna biology were discussed.
- June 21 - Baxter, Frey, and Jow attended MRO-MRB planning meeting, Sacramento.
- June 21 - Poole met with the faculty of Hopkins Marine Station to discuss the possibility of a joint sea water intake for the use of our shellfish laboratory and Stanford University.
- June 24 - C. T. Chueh, Fisheries expert from Taipei, Formosa visited Clemens to discuss tuna research.

- June 25-26 - Katkansky and Warner attended the Pacific Coast Oyster Mortality Study slide reading conference in Seattle, Washington.
- June 25-27 - Jow, Nitsos, Smith, and Gregory attended a meeting of the Technical Subcommittee of the International Trawl Fishery Committee in San Francisco.
- June 27 - Roedel and Baxter visited the Menlo Park Laboratory.
- June 29-30 - Baxter and Messersmith attended the annual meeting of the California Wildlife Federation, Sacramento.

B. Personnel

- June 17 - Charles W. Haugen reinstated as Junior Aquatic Biologist, Upper Newport Bay Study, Terminal Island.
- June 18 - Marvin D. Waldrop appointed TAU Deckhand, Fish and Game Boat, Research Vessels, Terminal Island.

  
John L. Baxter  
Acting Manager

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